

FORM PTO-1390
(REV. 11-2000)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER
P/62933-PCTTRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

09/857821

INTERNATIONAL APPLICATION NO.
PCT/DE99/03200INTERNATIONAL FILING DATE
10/02/1999PRIORITY DATE CLAIMED
12/12/1998

TITLE OF INVENTION TELECOMMUNICATION SYSTEM AND METHOD FOR TRANSMITTING DATA

APPLICANT(S) FOR DO/EO/US Siegfried BRUENLE, Juergen FISCHER

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371 (f)). The submission must include items (5), (6), (9) and (21) indicated below.
4. ☐ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☐ is attached hereto (required only if not communicated by the International Bureau).
 - b. ☒ has been communicated by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
 - a. ☐ is attached hereto.
 - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)).
 - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ have been communicated by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11 to 20 below concern document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☐ A FIRST preliminary amendment.
14. ☐ A SECOND or SUBSEQUENT preliminary amendment.
15. ☐ A substitute specification.
16. ☐ A change of power of attorney and/or address letter.
17. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
18. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
19. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
20. ☒ Other items or information: Form PCT/IB/301; 304; 308, PCT/IPEA/416; 409

11 JUN 2001

U.S. APPLICATION NO (if known, see 37 CFR 1.5)

09/857821

INTERNATIONAL APPLICATION NO

PCT/DE99/03200

ATTORNEY'S DOCKET NUMBER

P/62933-PCT

21. ☒ The following fees are submitted:**BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :**

Neither international preliminary examination fee (37 CFR 1.482)
nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO
and International Search Report not prepared by the EPO or JPO \$1,000.00

International preliminary examination fee (37 CFR 1.482) not paid to
USPTO but International Search Report prepared by the EPO or JPO \$860.00

International preliminary examination fee (37 CFR 1.482) not paid to USPTO
but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$710.00

International preliminary examination fee (37 CFR 1.482) paid to USPTO
but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$690.00

International preliminary examination fee (37 CFR 1.482) paid to USPTO
and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00

ENTER APPROPRIATE BASIC FEE AMOUNT =

\$860.00

Surcharge of **\$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30
months from the earliest claimed priority date (37 CFR 1.492 (e)).

\$0.00

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	\$
Total claims	16 - 20 =	0	x \$18.00	\$0.00
Independent claims	2 - 3 =	0	x \$80.00	\$0.00
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$0.00	\$0.00

TOTAL OF ABOVE CALCULATIONS =

\$860.00

☐ Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above
are reduced by 1/2.

\$0.00

SUBTOTAL =

\$860.00

Processing fee of **\$130.00** for furnishing the English translation later than ☐ 20 ☐ 30
months from the earliest claimed priority date (37 CFR 1.492(f)).

\$0.00

TOTAL NATIONAL FEE =

\$860.00

Fee for recording the enclosed assignment (37 CFR 1.21 (h)). The assignment must be
accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). **\$40.00** per property +

\$0.00

TOTAL FEES ENCLOSED =

\$860.00

Amount to be
refunded:

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- a. ☒ A check in the amount of **\$860.00** to cover the above fees is enclosed.
- b. ☐ Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees.
A duplicate copy of this sheet is enclosed.
- c. ☐ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any
overpayment to Deposit Account No. _____. A duplicate copy of this sheet is enclosed.
- d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card
information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR
1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

Alan ISRAEL, Esq.
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SIGNATURE: 

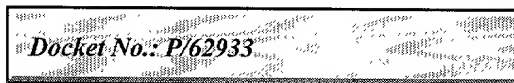
Alan Israel
NAME

27564
REGISTRATION NUMBER

FORM PTO-1390

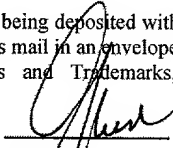
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Alan Israel
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PATENT APPLICATION
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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(date)


Alan Israel
Reg. No. 27,564

In re: Application of : Siegfried BRUENLE, et al.

Serial No. : 09/857,821 Group Art Unit:

Filed : September 5, 2001 Examiner:

For : TELECOMMUNICATION SYSTEM AND
METHOD FOR TRANSMITTING DATA

New York, New York
September 5, 2001

PRELIMINARY AMENDMENT

Hon. Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

Prior to examination and calculation of the filing fee, please use the enclosed English Translation of the filed German text as the examination copy, and amend the English Translation as follows:

IN THE CLAIMS:

Please cancel claims 1-16, without prejudice.

Please add new claims 17-32 as set forth on the enclosed pages.

REMARKS

A new set of claims conforming to U.S. practice is enclosed.

Respectfully submitted,

KIRSCHSTEIN, OTTINGER, ISRAEL & SCHIFFMILLER, P.C.

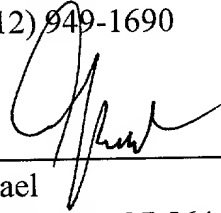
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PROPOSED NEW CLAIMS

17. A telecommunication system, comprising:

- a) a base station;
- b) at least one base station-router allocated to the base station;
- c) several subscriber stations with respective subscriber station-

routers connected via a connection network at variable transmission rates with the base station, for creating a telecommunication link with said at least one base station-router; and

d) said at least one base station-router being operative for controlling the variable transmission rate allocated to each telecommunication link between the base station and each subscriber station.

18. The telecommunication system according to claim 17, wherein said at least one base station-router dials a respective subscriber station-router to create a connection between the base station and the respective subscriber station.

19. The telecommunication system according to claim 18, wherein said at least one base station-router is operative for dialing via an ISDN primary multiplex connection.

20. The telecommunication system according to claim 17, wherein the base station is connected with said at least one base station-router via an interface with V5.2 protocol.

21. The telecommunication system according to claim 18, wherein the base station has a separate interface for speech communication.

22. The telecommunication system according to claim 21, wherein the separate interface works with V5-protocol.

23. The telecommunication system according to claim 17, wherein the variable transmission rate between the base station and each subscriber station varies in steps of 64 kbit/s.

24. The telecommunication system according to claim 17, wherein said at least one base station-router has several 2 Mbit/s interfaces and/or an Ethernet interface to an external communication network.

25. The telecommunication system according to claim 17, wherein data is transmitted between the base station and each subscriber station by means of the G.704 general structure of the International Telecommunication Union.

26. The telecommunication system according to claim 17, wherein data is transmitted between the base station and each subscriber station by means of radio transmission signals, and wherein the radio transmission signals are concentrated in air from a point-to-multipoint system.

27. The telecommunication system according to claim 17, wherein data is transmitted between the base station and each subscriber station via a light-wave conductor.

28. The telecommunication system according to claim 17, wherein data is transmitted between the base station and each subscriber station via an HDSL-connection.

29. The telecommunication system according to claim 17, wherein data is transmitted between the base station and each subscriber station via a synchronous digital hierarchy connection.

30. The telecommunication system according to claim 17, wherein an Ethernet interface is located at each subscriber station-router.

31. The telecommunication system according to claim 17, wherein interfaces for speech communication are present at the subscriber stations.

32. A method of transmitting data between a base station and several subscriber stations, comprising the steps of:

- a) allocating the base station to a base station-router;
- b) allocating several subscriber stations to respective subscriber station-routers to create a telecommunication link with the base station-router; and
- c) controlling a variable data transmission rate allocated to each telecommunication link between the base station and each subscriber station.

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Telecommunication system and method to transmit data

The invention relates to a telecommunication system and method to transmit data.

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State of the art

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For data traffic, for example Internet access by means of TCP/IP Protocol (Transmission Control Protocol/Internet Protocol) between a base station of a network operator and a subscriber station, routers are used at both ends of the telecommunication connection, which require permanently allocated transmission capacity, so called Leased Lines of 2 Mbit/s for example. In the case of the subscriber station this may be the communication link of a company or for instance of a multi-residence building. In any case several analogue or digital terminals for speech and/or data communication can be connected to the subscriber station. The data between base station and subscriber station can in this case be transmitted via a fixed copper or glass fibre network or via a radio link.

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However with data traffic, greater fluctuations of the data flow can occur than is the case with speech traffic. Should for example a large data file be downloaded from the Internet or transferred via an Intranet, a high transmission bandwidth is required for the telecommunication link so that the data can be transmitted within a time acceptable to the user. At the moment, if such data transfer does not take place, then the necessary transmission bandwidth on the contrary is low. In providing the transmission bandwidth for the telecommunication connection

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therefore either costly over-capacities result, or in the case of heavy demand congestion occurs.

Advantages of the invention

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The telecommunication system according to the invention with the features detailed in claim 1 and the method according to the invention to transmit data with the features detailed in claim 16 have the advantage, due to variable transmission capacity of the individual transmission lines, of enabling the actual amount of data traffic to be dynamically adjusted. As a result an existing network infrastructure can be used better and more efficiently and at the same time an increased quality of service can be provided even at the time of heavy demand. This means that with an increased maximum data transmission rate per subscriber a greater number of subscriber stations can be served at the same time by the base station.

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The advantages are achieved through a telecommunication system and method to transmit data with a base station, a base station-router allocated to the base station, several subscriber stations connected via a network with the base station, with subscriber station-routers to create a telecommunication connection with the base station-router, whereby the base station-router controls the variable transmission rates of the data signals in each case allocated to a telecommunication link between base station and subscriber station. In this case the base station-router takes on the same role as switching stations fulfil in speech traffic.

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Preferably the base station-router can be dialled up by the subscriber station-router to create a connection between base station and subscriber station. Dialling is preferably via an ISDN primary multiplex connection (PRA).

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Preferably the base station is connected with the base station-router via an interface with V5.2 protocol. An interface of this type has the advantage of

enabling the particular transmission capacity to be allocated and assigned to the individual data connections.

5 Preferably the base station has a separate interface for speech communication which for example works with V5 protocol. This interface can be connected to an external telecommunication network for speech transmission. This architecture results in the fact that the data traffic (IP protocol) is separate from the speech communication and thus dialled connections are not blocked by high data streams arising from the data connection.

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Preferably the transmission rate between the base station and a subscriber station can be variably selected in steps of 64 kbit/s for example.

15 The base station-router can have several 2 Mbit/s interfaces and/or an Ethernet interface to an external communication network, such as for example an Internet Service Provider.

20 The data can be transmitted between base station and a subscriber station in this case for example by means of the ITU-G.704 protocol via an HDSL connection over a fixed network or by radio.

25 Preferably at the subscriber station-router there is an Ethernet interface to connect to LAN (Local Area Network) terminals. The subscriber station preferably has further interfaces for speech communication (U, S0, a/b) and Leased Lines (LL).

Drawing

30 The invention is explained in detail below using embodiment examples together with the attached drawing, which shows a schematic block circuit diagram for a configuration of the telecommunication system according to the invention.

Description of embodiment examples

The single figure shows in a schematic block circuit diagram a typical configuration of the telecommunication system according to the invention.

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The central part of the configuration is a base station 2, which is coupled via an interface 3 with a base station-router 4. The base station 2, also called Central Distribution Node, is a central data-processing and computer unit to control a variety of incoming and outgoing connections. A unit of the MSV5 type can be used as base station 2.

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In the figure on the left hand side two subscriber stations 10 can be seen illustrated by way of example. In each case these have a modem 12 or similar to connect to a telecommunication connection 21, 22, a central unit 14, a user unit 18 as well as a subscriber station-router 16. The user unit 18 has a speech communication interface 17, to which analogue as well as digital terminals such as telephones, fax machines or similar can be connected (U, S0, a/b and LL interfaces). The subscriber station-router 16 possesses an Ethernet interface 15 which provides connection to LAN (Local Area Network) terminals such as networked PCs or similar.

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The connection network between base station 2 and the subscriber stations 10 can, as illustrated schematically in the figure, be created via fixed network 21 or by radio connection 22. This can be a 2 Mbit/s connection in accordance with the G.704 general structure of the International Telecommunication Union (ITU), an SDH (Synchronous Digital Hierarchy) network or a point-to-multipoint radio connection of the DMS type (Digital Multipoint System).

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The base station 2 is connected via the interface 3 with the base station-router 4. This has the function of controlling the data connection to the subscriber station-routers 16 contained in the subscriber stations 10. The interface 3

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preferably consists of a number of 2 Mbit/s interfaces in accordance with protocol V5.2 according to ETS 300 347 corresponding to ITU G.965. Up till now only interfaces, which work with this protocol, have been used for analogue and ISDN connections. The use of such an interface for the base station-router 4 allows the capacity of the data connection between base station and subscriber stations to be controlled in a similar way to speech connection, for example in 64 kbit/s steps between a minimum capacity of 64 kbit/s and a maximum capacity of 2 Mbit/s for each data connection. The respective 64 kbit/s time slots of a 2 Mbit/s connection can be distributed individually and dynamically to the lines to the respective subscriber stations 10 by means of the base station-router 4.

The base station-router 4 behaves identically as for example an ISDN connection in regard to the band width allocation. The 64 kbit/s time slot is built up or dismantled corresponding to the build-up or dismantling of a ISDN channel. Within the system the traffic between base station-router 4 and subscriber station-router 10 behaves just like ISDN traffic. Through the use of the V5.2 protocol the base station-router also has a concentration function. Thus it is possible, for example, to connect 100 subscriber station-routers 16 to one base station-router. Although the base station-router 4 has for example only 4 x 2-Mbit/s interfaces to supply the subscriber stations, nevertheless each of the 100 base station-routers 16 can, for a short period, have a maximum capacity of 30 x 64 kbit/s, as a result of which large quantities of data can also be transferred rapidly. As a result of this concentration function by the base station-router 4 any capacity being carried away away to the POP (Point of Presence) is minimised.

The architecture of the telecommunication system according to the invention means that only the actual transmission rate needed is made available each time on demand by the network as a result of function of the base station router 4 connected via the V5.2 interface with the base station 2 in the case of an ISDN primary multiplex connection (PRA) to the respective subscriber station-router

16. Compared to previous usual connections for data traffic with fixed transmission capacity (Leased Lines) this gives much greater flexibility and results in more cost effective use of the line as well as the switching resources.

- 5 With this architecture the mechanisms of ISDN-PRA with V5.2 are used to create the connection between a subscriber station-router 16 and the base station-router 4 and vice-versa, that is to say the subscriber station-router is switched via ISDN-PRA in the D-channel, which is transmitted transparently within the connection network, to the base station-router. The V5-module in the
10 base station-router causes the base station 2 to change to the desired transmission capacity. The data streams according to the Internet Protocol (IP) are transmitted transparently through the connection network 21, 22.

- Preferably the base station 2 has a separate interface 6, for example a V5
15 interface to connect to a telephone network for speech communication. The base station-router 4 can again be connected via an Ethernet interface 5 to an Internet Service Provider 30. As a result the IP data streams are fed independently of the interface 6 for speech communication directly via the base station router 4 into the IP network. Consequently it is ensured that the interface 6 designed for dial-
20 up connections is not blocked by the IP data streams.

- The telecommunication system and method to transmit data according to the invention can make available the transmission capacity for a data connection between base station and subscriber station required at this particular moment,
25 for example by using a DBA (Dynamic Bandwidth Allocation) algorithm. The available transmission bandwidth, for example on beamed radio links, is used more efficiently and more cost effectively as a result. The separation of data traffic and speech communication in the base station relieves the interface 6 to the telephone network of the IP data streams.

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Patent claims

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1. Telecommunication system having:

a base station (2), at least one base station-router (4) allocated to the base station (2), several subscriber stations (10) with respective subscriber station-routers (16), connected via a connection network (21, 22) with the base station (2), to
10 create a telecommunication link with the base station-router (4), whereby the base station-router (4) is designed to control the variable transmission rates in each case allocated to a telecommunication line between base station (2) and subscriber station (10).

15 2. Telecommunication system according to claim 1, **characterised in that** to create the connection between base station (2) and subscriber station (10) the base station-router (4) can be dialled by the subscriber station-router (16).

3. Telecommunication system according to claim 2, **characterised in that** the
20 dialling is done via an ISDN primary multiplex connection (PRA).

4. Telecommunication system according to one of claims 1 to 3, **characterised in that** the base station (2) is connected with the base station-router (4) via an interface (5) with V5.2 protocol.

25

5. Telecommunication system according to one of claims 1 to 4, **characterised in that** the base station (2) has a separate interface (6) for speech communication.

30 6. Telecommunication system according to claim 5, **characterised in that** the separate interface (6) works with V5-protocol.

7. Telecommunication system according to one of claims 1 to 6, **characterised in that** the transmission rate between base station (2) and a subscriber station (10) is variable in steps of 64 kbit/s.

5 8. Telecommunication system according to one of claims 1 to 7, **characterised in that** the base station router (4) has several 2 Mbit/s interfaces and/or an Ethernet interface (5) to an external communication network (30).

9. Telecommunication system according to one of claims 1 to 8, **characterised in that** the data is transmitted between base station (2) and a subscriber station (10) by means of the G.704 general structure of the International Telecommunication Union (ITU).

10. Telecommunication system according to one of claims 1 to 9, **characterised in that** the data is transmitted between the base station (2) and a subscriber station (10) by means of radio transmission and the data signals are concentrated in the air to a point-to-multipoint system.

11. Telecommunication system according to one of claims 1 to 9, **characterised in that** the data is transmitted between the base station (2) and a subscriber station (10) via a light-wave conductor.

12. Telecommunication system according to one of claims 1 to 9, **characterised in that** the data is transmitted between the base station (2) and a subscriber station (10) via an HDSL-connection.

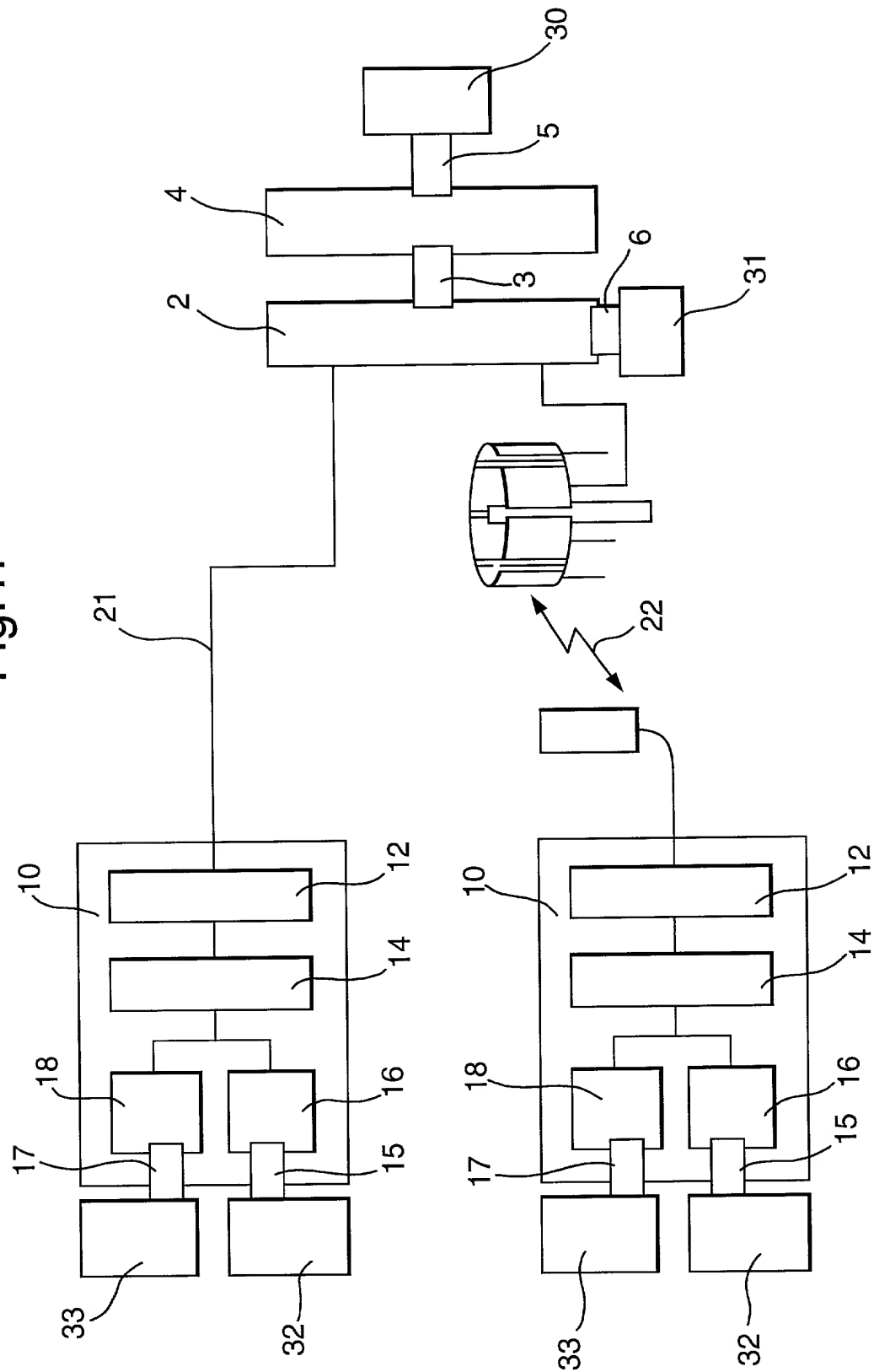
13. Telecommunication system according to one of claims 1 to 9, **characterised in that** the data is transmitted between the base station (2) and a subscriber station (10) via an SDH (Synchronous Digital Hierarchy) connection.

14. Telecommunication system according to one of claims 1 to 13,
characterised in that there is an Ethernet interface (15) at the subscriber
station-router (16).

- 5 15. Telecommunication system according to one of claims 1 to 14,
characterised in that there are interfaces (17) for speech communication at the
subscriber stations (10).

- 10 16. Method to transmit data between a base station (2) and several subscriber
stations (10), whereby the base station (2) is allocated to a base station router (4)
and the subscriber stations (10) have a subscriber station-router (16) to create a
telecommunication link with the base station-router (4), and whereby the base
station-router (4) controls the variable data transmission rates allocated to a
telecommunication link between base station (2) and a subscriber station (10).

Fig.1.



Approved for use through 8/30/88 OMB 0651-0032
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Table 1. Continued	
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Page 2

U.S. Parent Application Number	PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number (if applicable)

As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

☒ **OR**
List attorney(s) and/or agent(s) name and registration number below:

☐ Additional attorney(s) and/or agent(s) named on a supplemental sheet attached hereto.

Fax (212) 949-1690

 A petition has been filed for this unsigned inventor

City	Allmersbach	State		Zip	D-71573	Country	DE (GERMANY)	Applicant Authority	
------	-------------	-------	--	-----	---------	---------	--------------	---------------------	--

☒ Additional inventors are being named on supplemental sheet(s) attached hereto

+

[illegible]